

PROJECT NUMBER: 1806
PROJECT TITLE: New Tobacco Processes
PROJECT LEADER: S. R. Wagoner
PERIOD COVERED: July, 1987

I. CIGARETTE QUALITY

- A. **Objective:** Evaluate cigarette quality improvements using tobacco materials produced from new and/or less costly technologies.
- B. **Results:** Compacimetric testing was completed on the cigarettes made from superheated and control fillers, each produced with and without the Rothman's cross country unit prior to the cutter. The runs with the cross country infeed were not significantly different from those with the paddle feed, and both superheating trials produced a 0.3 mm firmness improvement versus nonsuperheating. Thus, the firmness benefit gained from superheating was not reduced by the cross country unit.

Also, the cigarettes were subjectively evaluated by the Domestic Cigarette Development Panel. Compared to the paddle feed/nonsuperheated control, the paddle feed/superheated and cross country/nonsuperheated combinations were found to be different, while the cross country/superheated trial was not different.

Since the Semiworks tunnel has been relocated to Louisville, a quotation was requested from Hauni for an HT tunnel to process 1000-2500 lb/hr of cut filler at 21% moisture. The price is DM 190,500 (approximately \$100,000) with a delivery of seven months.

- C. **Plans:** Currently, a summary report of program results is being written to support the purchase of the Hauni HT tunnel.

II. STEM PROCESSING

- A. **Objective:** To provide a process for the direct conversion of stem materials into useable filler.
- B. **Results:**

Runs on the upgraded stem line have produced approximately 5000 lb of shredded, washed bright stem for future use by the ART facility. Individual rates of 1000, 350, and 550 lb/hr can be accomplished for the conditioning, shredding, and drying operations, respectively.

Check-out runs on the mono-basic potassium citrate application line have demonstrated the capability of preparing the solution from citric acid and either potassium hydroxide or tri-basic potassium citrate. An automatic titrator has been set up to determine solution concentration and casing level on the stems.

In addition, samples of the casing solution and cased stems were provided to Tobacco Microbiology (Project 1902) for evaluation of microbial growth.

Laboratory experiments were conducted washing bright and burley shredded stems with 60, 70, and 80°C water for various times to determine the effect on nicotine and hot water solubles removal. Chemical analysis is not yet available.

- C. **Plans:** After building the shredded stem stockpile to the required quantity, the new Sprout-Bauer refiner will be installed, which should increase the shredding rate to 1000 lb/hr. At that time, modifications will be made to the dryers to increase their capacity.

III. BINDER DEVELOPMENT

- A. **Objective:** Develop methods to produce binder systems for the foamed bound rod, bonded ends, and reduced density rod programs.
- B. **Results:** Genu X7991 from Hercules foamed well at a 40% concentration in the laboratory. Foam density, molecular weight, and viscosity values were promising, and a larger batch was requested. Two samples from Grindsted, TSP-091 and 092, were also characterized in the laboratory and found to be acceptable. These were prepared at concentrations of 45 and 40%, respectively, for cigarette making trials.

Modified Smoking Materials (Project 1503) requested batches of in-house degraded citrus pectin for spray drying tests, ultrafiltration runs, and cigarette making trials. The ultrafiltration runs have shown the 100,000 molecular weight screen to be blinded by calcium aggregates of pectin. The effect of the aggregates on foam and cigarette quality will be evaluated, and could lead to the setting of a calcium specification for the vendors.

In support of the bonded ends program, polydextrose solutions were prepared. Also, solutions of 5% CMC, 1% xanthan gum, and 25% degraded citrus pectin were made for laboratory spotting tests.

- C. **Plans:** Continue to provide support as required for the above programs. Characterization of binder solutions produced with the continuous degradation process will require major effort in the short term.